

What is claimed is:

- 1        1. An interconnect stage comprising:
  - 2            a. a vertical symmetry plane;
  - 3            b. a rotation axis substantially perpendicular to  
4                said symmetry plane;
  - 5            c. a conductive see-saw structure including:
    - 6                i . a substantially planar central portion  
7                    horizontally extending around an  
8                    intersection of said symmetry plane and  
9                    said rotation axis;
    - 10              ii. a first peripheral arm laterally extending  
11                    from said central portion along said  
12                    symmetry plane and peripherally  
13                    terminating in a first contact tip, said  
14                    first arm pointing downwards in a first  
15                    angle with respect to said planar central  
16                    portion;
    - 17              iii.a second peripheral arm laterally  
18                    extending from said central portion along  
19                    said symmetry plane and peripherally  
20                    terminating in a second contact tip, said  
21                    second arm extending in opposing position  
22                    and orientation to said first arm, said  
23                    second arm pointing upwards in a second  
24                    angle with respect to said planar central  
25                    portion;
    - 26              d. a dielectric resilient means including:
      - 27                i. an interface portion combined with said  
28                    central portion;

ii. two torsion features laterally extending from opposing ends of said interface portion along said rotation axis; and wherein said resilient means is configured to be peripherally fixed and configured such that a force induced onto at least one of said first contact tip and said second contact tip results in a rotational displacement of said see-saw structure around said rotation axis, said rotational displacement being opposed by a resiliently torsion deformation of said torsion features.

2. The interconnect stage of claim 1, wherein said see-saw structure is substantially symmetric with respect to said symmetry plane.

3. The interconnect stage of claim 1, wherein said resilient means is substantially symmetric with respect to said symmetry plane.

4. The interconnect stage of claim 1, wherein said see-saw structure is substantially symmetric with respect to said rotation axis.

5. The interconnect stage of claim 1, wherein said resilient means is substantially symmetric with respect to said rotation axis.

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1       6. The interconnect stage of claim 1, wherein  
2            said resilient means has a constant  
3            thickness.

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1       7. The interconnect stage of claim 1, wherein  
2            said see-saw structure has a constant  
3            thickness.

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1       8. The interconnect stage of claim 1, wherein  
2            said see-saw structure further features a  
3            slot propagating from at least one of said  
4            first contact tip and said second contact  
5            tip along said symmetry plane towards said  
6            rotation axis, wherein said slot  
7            conductively divides at least partially at  
8            least one of said first peripheral arm, said  
9            second peripheral arm and said central  
10          portion.

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1       9. The interconnect stage of claim 8,  
2            wherein said slot propagates between  
3            said first contact tip and said second  
4            contact tip dividing said see saw  
5            structure into at least two  
6            conductively separated entities.

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1       10. The interconnect stage of claim 1, wherein  
2            said interface portion occupies a fraction  
3            of said planar central portion such that a  
4            top and a bottom of said central portion are

5                   directly accessible in the vicinity of said  
6                   peripheral arms.

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1         11. The interconnect stage of claim 1, wherein  
2                said interface portion has a first width  
3                substantially larger than a second width of  
4                said torsion feature such that a  
5                delamination origin between said central  
6                portion and said interface portion is in a  
7                larger distance to said rotation axis than a  
8                peak shear point of said dielectric  
9                resilient means.

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1         12. The interconnect stage of claim 1, wherein  
2                said resilient means further comprises a  
3                flex feature extending from at least one of  
4                said torsion features in direction  
5                substantially parallel to said symmetry  
6                plane in an offset to said see-saw structure  
7                such that said rotational displacement is  
8                additionally opposed by a resilient flexural  
9                deformation of said flex feature.

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1         13. The interconnect stage of claim 1, further  
2                comprising a stiffening structure combined  
3                with said interface portion on the opposite  
4                side of said planar center portion.

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1         14. An interconnect assembly comprising:  
2                a. a carrier frame including:  
3                       i. a circumferential support frame;

4                         ii. a dielectric carrier grid combined with  
5                                 said circumferential support frame;  
6                         b .a number of two dimensionally arrayed  
7                                 interconnect stages, at least one of said  
8                                 interconnect stages comprising:  
9                                 i. a vertical symmetry plane;  
10                                 i i a rotation axis substantially  
11   perpendicular to said symmetry plane:  
12                                 iii. a conductive see-saw structure including:  
13                                 1 a substantially planar central  
14   portion horizontally extending around  
15   an intersection of said symmetry  
16   plane and said rotation axis;  
17                                 2 .a first peripheral arm laterally  
18   extending from said central portion  
19   along said symmetry plane and  
20   peripherally terminating in a first  
21   contact tip, said first arm pointing  
22   downwards in a first angle with  
23   respect to said planar central  
24   portion;  
25                                 3 .a second peripheral arm laterally  
26   extending from said central portion  
27   along said symmetry plane and  
28   peripherally terminating in a second  
29   contact tip, said second arm  
30   extending in opposing position and  
31   orientation to said first arm, said  
32   second arm pointing upwards in a  
33   second angle with respect to said  
34   planar central portion;

35                          iv. a dielectric resilient means combined with  
36                          said carrier grid, said dielectric  
37                          resilient means including:

- 38                          1 .an interface portion combined with  
39                          said central portion;  
40                          2 .two torsion features laterally  
41                          extending from opposing ends of said  
42                          interface portion along said rotation  
43                          axis; and

44                          wherein said resilient means is configured such  
45                          that a force induced onto at least one of said  
46                          first contact tip and said second contact tip  
47                          results in a rotational displacement of said see-  
48                          saw structure around said rotation axis, said  
49                          rotational displacement being opposed by a  
50                          resilient torsion deformation of said torsion  
51                          features.

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1                          15. The interconnect assembly of claim 14,  
2                          wherein said see-saw structure is  
3                          substantially symmetric with respect to said  
4                          symmetry plane.

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1                          16. The interconnect assembly of claim 14,  
2                          wherein said resilient means is  
3                          substantially symmetric with respect to said  
4                          symmetry plane.

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1                          17. The interconnect assembly of claim 14,  
2                          wherein said see-saw structure is  
3                          substantially symmetric with respect to said  
4                          rotation axis.

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1       18. The interconnect assembly of claim 14,  
2           wherein said resilient means is  
3           substantially symmetric with respect to said  
4           rotation axis.

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1       19. The interconnect assembly of claim 14,  
2           wherein said resilient means has a constant  
3           thickness.

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1       20. The interconnect assembly of claim 14,  
2           wherein said see-saw structure has a  
3           constant thickness.

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1       21. The interconnect assembly of claim 14,  
2           wherein said see-saw structure further  
3           features a slot propagating from at least  
4           one of said first contact tip and said  
5           second contact tip along said symmetry plane  
6           towards said rotation axis, wherein said  
7           slot conductively divides at least partially  
8           at least one of said first peripheral arm,  
9           said second peripheral arm and said central  
10          portion.

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1       22. The interconnect assembly of claim 21,  
2           wherein said slot propagates between  
3           said first contact tip and said second  
4           contact tip dividing said see saw  
5           structure into at least two  
6           conductively separated entities.

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1           23. The interconnect assembly of claim 14,  
2           wherein said interface portion occupies a  
3           fraction of said planar central portion such  
4           that a top and a bottom of said central  
5           portion are directly accessible in the  
6           vicinity of said peripheral arms.

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1           24. The interconnect assembly of claim 14,  
2           wherein said interface portion has a first  
3           width substantially larger than a second  
4           width of said torsion feature such that a  
5           delamination origin between said central  
6           portion and said interface portion is in a  
7           larger distance to said rotation axis than a  
8           peak shear point of said dielectric  
9           resilient means.

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1           25. The interconnect assembly of claim 14,  
2           wherein said torsion features of each of  
3           said number of interconnect stages are fixed  
4           at and protruding from x-oriented grid  
5           members of said carrier grid.

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1           26. The interconnect assembly of claim 14,  
2           wherein said torsion features and said  
3           interface feature of each of said number of  
4           interconnect stages define y-oriented grid  
5           members of said carrier grid.

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1           27. The interconnect assembly of claim 14,  
2           wherein said resilient means further  
3           comprises a flex feature extending from at

4           least one of said torsion features in  
5           direction substantially parallel to said  
6           symmetry plane in an offset to said see-saw  
7           structure such that said rotational  
8           displacement is additionally opposed by a  
9           resilient flexural deformation of said flex  
10          feature.

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1           28. The interconnect assembly of claim 27,  
2           wherein said flex feature is part of an  
3           x-oriented grid member of said carrier  
4           grid.

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1           29. The interconnect assembly of claim 27,  
2           wherein an x-oriented grid member of  
3           said carrier grid is defined by a  
4           number of said flex feature of each of  
5           said number of interconnect stages.

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1           30. The interconnect assembly of claim 14,  
2           further comprising a stiffening structure  
3           combined with said interface portion on the  
4           opposite side of said planar center portion.

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1           31. The interconnect assembly of claim 14 being  
2           part of a test apparatus for repetitively  
3           receiving and testing a circuit chip,  
4           wherein said first second contact tip of at  
5           least one of said number of interconnect  
6           stages is contacting a first contact of said  
7           test apparatus and wherein said second  
8           contact tip of at least one of said number

9                   of interconnect stages is contacting a  
10                  second contact of said circuit chip.

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1                 32. The interconnect assembly of claim 14  
2                  fabricated by a method including the steps  
3                  of:

- 4                 a. conductively combined planar shaping of  
5                  a number of said see-saw structure;  
6                 b. fabricating said carrier frame;  
7                 c. combining said number of said  
8                  conductively combined and planar shaped  
9                  see-saw structures with said carrier  
10                 frame;  
11                 d. electro plating said number of  
12                  conductively combined and planar shaped  
13                  see-saw structures and consecutively  
14                  releasing said number of said planar  
15                  shaped see-saw structures; and  
16                 e. 3D forming said number of said released  
17                  planar shaped see-saw structures.